of the larva. They differ, to the eye at least, almost as much as air differs from water.

Of the friends to whom I am indebted for help, I must specially name my fellow-worker, Mr. Arthur Hammond, who has communicated to me many results of his own observations, and has drawn most of the illustrations shown this evening. My colleague, Dr. Stroud, has very kindly arranged, and in some cases devised, the physical experiments which have been so helpful to us.

FORTHCOMING SCIENTIFIC BOOKS.

THE following announcements are made by Messrs. Macmillan and Co.:—"Essays on some Controverted Questions," by T. H. Huxley, F.R.S.; "Dr. Schliemann's Excavations at Troy, Tiryns, Mycenæ, Orchomenos, Ithaca, presented in the light of recent knowledge," by Dr. Carl Shuchhardt, authorized translation by Miss Eugenie Sellers, with appendix on latest researches by Drs. Schliemann and Dörpfeld, and introduction by Walter Leaf, illustrated with two portraits, maps, plans, and 290 woodcuts; "Beast and Man in India," by J. L. Kipling, with numerous illustrations by the author; "An Introduction to the Theory of Value," by William Smart; "Public Finance," by C. F. Bastable, Professor of Political Economy, Trinity College, Dublin; "The Pioneers of Science," by Prof. Oliver Lodge, with portraits and other illustrations; "Electricity and Magnetism: a Popular Treatise," by Amédée Guillemin, translated and edited, with additions and notes, by Prof. Silvanus P. Thompson, author of "Elementary Lessons in Electricity," &c., with numerous illustrations, uniform with the English editions of M. Guillemin's "The Forces of Nature" and "The Application of Physical Forces"; "Island Life; or, The Phenomena and Causes of Insular Faunas and Floras," including a revision and attempted solution of the problem of geological climates, by Dr. A. R. Wallace, with illustrations and maps, new and cheaper edition; "A Complete Treatise on Inorganic and Organic Chemistry," by Sir Henry E. Roscoe, F.R.S., and Prof. C. Schorlemmer, F.R.S., Vol. III. "Organic Chemistry; the Chemistry of the Hydrocarbons and their derivatives, or organic chemistry," six parts, Part VI.; "A Text-book of Physiology," illustrated, fifth edition, revised, Part IV. comprising the remainder of Book III. "The Senses and Some Special Muscular Mechanisms," and Book IV. "The Tissues and Mechanisms of Reproduction," by Michael Foster, F.R.S., Professor of Physiology in the University of Cambridge; "Text-book of Comparative Anatomy," by Dr. Arnold Lang, Professor of Zoology in the University of Zurich, formerly Ritter Professor of Phylogeny in the University of Jena, issued as the ninth edition of Edward Oscar Schmidt's "Hand-book of Comparative Anatomy," translated into English by Henry M. Bernard and Matilda Bernard, with preface by Prof. Ernst Haeckel, 2 vols., illustrated (Vol. I. in October); "Materials for the Study of Variation in Animals" (Part I. Discontinuous Variation), by William Bateson, Balfour Student and Fellow of St. John's College, Cambridge, illustrated; "The Diseases of Modern Life," by Dr. B. W. Richardson, new and cheaper edition; "Ligation in Continuity," by Drs. C. A. Ballance and Walter Edmunds, with illustrations and plates; "The Dietetic Value of Bread," by John Goodfellow; "On Colour Blindness," by Thomas H. Bickerton, illustrated (Nature Series); "The Geography of the British Colonies"—"Canada," by George M. Dawson, "Australia and New Zealand," by Alexander Sutherland; "The Algebra of Co-Planar Vectors and Trigonometry," by R. B. Hayward, F.R.S., Assistant Master at Harrow; "The Elements of Trigonometry," by Rawdon Levett and A. F. Davison, Masters in King Edward's School, Birmingham; "Progressive Mathematical Exercises for Home Work" (in two parts), by A. T. Richardson, Senior Mathematical Master at the Isle of Wight College, formerly Scholar of Hertford College, Oxford; "The Geometry of the Circle," by W. J. McClelland, Trinity College, Dublin, Head Master of Santry School, illustrated; "Mechanics for Beginners," by the Rev. J. B. Lock, author of "Arithmetic for Schools," &c., Part I. Mechanics of Solids, Part II. Mechanics of Fluids; "A Graduated Course of Natural Science for Elementary and Technical Schools and Colleges," by B. Loewy, Examiner in Experimental Physics to the College of Preceptors, Part II. Second Year's Course; "Methods of Gas Analysis," by Walter Hempel, Ph.D., translated by Dr. L. M. Dennis; "Nature's Story Books," I. "Sunshine," by Amy Johnson, illustrated.

The Cambridge University Press announces:—"Catalogue of Scientific Papers Compiled by the Royal Society of London," new series for the years 1874–1883; "The Collected Mathematical Papers of Arthur Cayley, Sc.D., F.R.S., Sadlerian Professor of Pure Mathematics in the University of Cambridge," Vol. IV. (to be completed in ten volumes); "A History of the Theory of Elasticity and of the Strength of Materials," by the late I. Todhunter, F.R.S., edited and completed by Karl Pearson, Professor of Applied Mathematics, University College, London—Vol. II. "Saint Venant to Sir William Thomson"; "A Treatise on Elementary Dynamics," new and enlarged edition, by S. L. Loney, Fellow of Sidney Sussex College; "Solutions of the Examples in a Treatise on Elementary Dynamics," by the same author; "A Treatise on Thermodynamics," by J. Parker, Fellow of St. John's College, Cambridge; "A History of Epidemics in Britain," Vol. I., from A.D. 664 to the extinction of Plague in 1666, by Charles Creighton, M.D., formerly Demonstrator of Anatomy in the University of Cambridge; "Catalogue of Type Fossils in the Woodwardian Museum, Cambridge," by H. Woods, of St. John's College, with preface by Prof. T. McKenny Hughes; "Examination Papers for Entrance and Minor Scholarships and Exhibitions in the Colleges of the University of Cambridge"—Part I. Mathematics and Science, Part II. Classics, Mediæval and Modern Languages, and History (Michaelmas Term, 1890), Part III. Mathematics and Science, Part IV. Classics, Law, and History (Lent Term, 1891); and three volumes in the Pitt Press Mathematical Series—"An Elementary Treatise on Plane Trigonomentry for the Use of Schools," by E. W. Hobson, Fellow of Christ's College, Cambridge, and University Lecturer in Mathematics, and C. M. Jessop, Fellow of Clare College; "Arithmetic for Schools," by C. Smith, Master of Sidney Sussex College, Cambridge; "Solutions to the Exercises in Euclid, Books I.—IV.," by W. W. Taylor.

The Clarendon Press promises "Geography of Africa South of the Zambesi," by W. Parr Greswell; "Mathematical Papers of the late Henry J. S. Smith, Savilian Professor of Geometry in the University of Oxford," with portrait and memoir, 2 vols.; "Plane Trigonometry, without Imaginaries," by R. C. J. Nixon; "A Treatise on Electricity and Magnetism," by J. Clerk Maxwell, new edition; "A Manual of Crystallography," by M. H. N. Story-Maskelyne; "Elementary Mechanics," by A. L. Selby; "Weismann's Lectures on Heredity," Vol. II., edited by E. B. Poulton, F.R.S.

During the coming winter Mr. Edward Arnold proposes to issue a series of popular papers on Animals, by Prof. C. Lloyd Morgan, the well-known author of "Animal Life and Intelligence"; "A Treatise on the Standard Course of Elementary Chemistry," by E. J. Cox, Head Master of the Technical School, Birmingham; and a series of scientific works, by Doctor Wormell (the series will embrace textbooks of Mechanics, Sound, Light, Heat, Magnetism and Electricity).

Messrs. Longmans, Green, and Co. announce a new volume of "Fragments of Science: being Detached Essays, Addresses, and Reviews," by John Tyndall, F.R.S. "About Ceylon and Borneo: being an Account of Two Visits to Ceylon, One Visit to Borneo, and how I Came Home and was Rocked to Sleep on the Bosom of—well, 'The Suez Canal,'" by Walter J. Clutterbuck, author of "The Skipper in the Arctic Seas," and joint author of "Three in Norway," and "B.C. 1887," with illustrations; "Anthropological Religion," the Gifford Lectures delivered before the University of Glasgow in 1891, by F. Max Müller; "An Introduction to Human Physiology," being the substance of lectures delivered at the St. Mary's Hospital Medical School from 1885 to 1890, by Augustus D. Waller; "Elements of Materia Medica and Therapeutics," with numerous illustrations, by C. E. Armand Semple, M.R.C.P. Lond., Member of the Court of Examiners, and late Senior Examiner in Arts at Apothecaries' Hall, &c.; "Outlines of Theoretical Chemistry," by Lothar Meyer, Professor of Chemistry in the University of Tübingen, translated by Profs. P. Phillips Bedson and W. Carleton Williams (this book, of about 200 pages, gives a concise account of the theories of modern chemistry, which, it is expected, will not only be of use to advanced students, but will also enable those who take a general interest in science, but are unfamiliar with the details of chemical investigation, to gain a general idea

© 1891 Nature Publishing Group

of the development of theoretical chemistry); "The Dynamics of Rotation," by A. M. Worthington, Professor of Physics, and Head Master of the Dockyard School, Portsmouth; "The Principles of Chemistry," by D. Mendeléeff, Professor of Chemistry in the University of St. Petersburg, translated by George Kamensky, A.R.S.M. of the Imperial Mint, St. Petersburg, and edited by A. J. Greenaway, Sub-Editor of the Journal of the Chemical Society, 2 vols.; "A Manual of the Science of Religion," by Prof. Chantepie de la Saussaye, translated by Mrs. Colyer Fergusson (*née* Max Müller), revised by the author; "Solutions: being an English Translation (by M. M. Pattison Muir) of Book IV. Vol. I. of the Second Edition of Prof. Ostwald's 'Lehrbuch der allgemeinen Chemie.'"

Messrs. Smith, Elder, and Co. have in preparation "Vertebrate Embryology," by A. Milnes Marshall, F.R.S., Professor in the Victoria University, Beyer Professor of Zoology in Owens College, late Fellow of St. John's College, Cambridge; new, revised, and cheaper edition of Finlayson's "Clinical Manual"; new edition of Farquharson's "Guide to Therapeutics"; new edition of Part I. of MacCormac's "Surgical Operations."

Messrs. Sampson Low, Marston, and Co. announce: "Theory and Analysis of Ornament," applied to the work of elementary and technical schools, by François Louis Schauermann, for eight years Head Master of the Wood and Carving Department, Royal Polytechnic, Regent Street, with 263 illustrations; "Answers to the Questions on Elementary Chemistry," theoretical and practical (ordinary course), set at the examinations of the Science and Art Department, South Kensington, 1887-91, by John Mills, formerly of the Royal College of Science, London, author of "Alternative Elementary Chemistry," fully illustrated; "Chemistry for Students," consisting of a series of lessons based on the Syllabus of the Science and Art Department, and specially designed to facilitate the experimental teaching of elementary chemistry in schools and evening classes, by John Mills, author of "Alternative Elementary Chemistry," &c., numerous illustrations; "A Complete Treatise on the Electro-Deposition of Metals," comprising electro-plating and galvanoplastic operations, the deposition of metals by the contact and immersion processes, the colouring of metals, the methods of grinding and polishing, &c., translated from the German of Dr. George Langbein, with additions by William T. Brannt, editor of "The Techno-Chemical Receipt Book," &c., illustrated by 125 engravings; "Handwriting in Relation to Hygiene," being a paper read at the Seventh International Congress of Hygiene and Demography, London, 1891, by John Jackson, and the Report of the Commission of Specialists appointed by the Imperial and Royal Supreme Council of Health, Vienna, 1891.

The next volume of the Contemporary Science Series, published by Mr. Walter Scott, will be "The Man of Genius," by Prof. Lombroso; this volume, which will be issued on September 25, will be copiously illustrated.

Messrs. Blackie and Son have in the press a "Text-book of Agriculture," under the editorship of Prof. R. P. Wright, of the Glasgow and West of Scotland Technical College; they have also in preparation a series of "Guides to the Science Examinations" (the first number, which is nearly ready, is by Mr. Jerome Harrison, of Birmingham, and deals with the examinations in physiography); Pinkerton's "Mechanics," in their series of Science Text-books, is about to enter a second edition, and the opportunity is being taken to adapt it to the revised requirements of the 1891 Syllabus of the Science and Art Department.

Messrs. A. and C. Black have in preparation: "Manual of Chemistry," by Dr. Alexr. Scott, Durham; "Manual of Botany," by Dr. Scott, Bickley; "Dictionary of Birds," by Prof. Alfred Newton and Dr. Gadow.

Messrs. Whittaker and Co. announce the following books:—In Whittaker's Library of Popular Science—"Light," by Sir H. Trueman Wood, Secretary of the Society of Arts, 86 illustrations, containing chapters on the Nature of Light, Reflection, Refraction, Colour and the Spectrum, Lenses, Optical Instruments, &c.; "The Plant World: its Past, Present, and Future," by George Massee, with numerous illustrations. In Whittaker's Specialist's Series—Prof. Oliver Lodge's work upon "Lightning Conductors and Lightning Guards"; "The Alkali Maker's Hand-book," by Prof. Dr. George Lunge and Dr. F. Hurter, a new, revised, and enlarged edition; "Electric Light Cables and the Distribution of Electricity," by Stuart A. Russell; "The Artificial Production of Cold," by H. G. Harris; "The Dynamo," by C. C. Hawkins and J. Wallis; "The Drainage of Habitable Buildings," by W. Lee Beardmore, Member of the Council and Hon. Sec. of the Civil and Mechanical Engineers' Society; a fourth revised and enlarged edition of "The Working and Management of an English Railway," by G. Findlay, General Manager of the London and North-Western Railway; "The Working and Management of an Atlantic Liner; with a Retrospect of the Trade," by A. J. Maginnis, recently Assistant Superintendent of the White Star Line. In Whittaker's Library of Arts, Sciences, Manufactures, and Industries—"A First Book of Electricity and Magnetism," by W. Perren Maycock; "The Practical Telephone Hand-book and Guide to Telephonic Exchange," by J. Poole, Whitworth Scholar, 1875, late Chief Electrician to the Lancashire and Cheshire Telephone Exchange Co., with 227 illustrations; "The Optics of Photography and Photographic Lenses," by J. Traill Taylor, editor of the *British Journal of Photography*; "The Art and Craft of Cabinet-making," by D. Denning, with upwards of 200 illustrations.

Messrs. Cassell and Co. announce:—"Geometrical Drawing for Army Candidates," by H. T. Lilley, new and enlarged edition; "A First Book of Mechanics for Young Beginners," with numerous easy examples and answers, by the Rev. J. G. Easton, late Scholar of St. John's College, Cambridge, formerly Head Master of the Grammar School, Great Yarmouth; "Work," yearly volume, an illustrated magazine of practice and theory for all workmen, professional and amateur; "The Principles of Perspective as Applied to Model-Drawing and Sketching from Nature," with 32 plates and other illustrations, by George Trobridge, Head Master Government School of Art, Belfast, second edition, revised and enlarged.

SCIENTIFIC SERIALS.

American Journal of Science, September.—On the capture of comets by planets, especially their capture by Jupiter, by H. A. Newton. The full paper is not now given. The completed results will be noted in Our Astronomical Column as soon as they are published.—Pleistocene fluvial planes of Western Pennsylvania, by Frank Leverett. Some facts are stated which clash with certain conclusions drawn by Mr. P. Max Foshay in a paper entitled "Pre-Glacial Drainage and Recent Geological History of Western Pennsylvania," which appeared in the November number of the *Journal*. From these it appears that the obstacles to a northward discharge of the Shenango, Mahoning, and Beaver are, on the whole, greater than those in the way of a southward discharge. In the Monongahela, Lower Alleghany, and the Ohio valleys, the available evidence all indicates southward discharge along the present course of the Ohio from the inter-Glacial period to the present time.—A method for the determination of antimony and its condition of oxidation, by F. A. Gooch and H. W. Gruener.—A method for the estimation of chlorates, by F. A. Gooch and C. G. Smith.—Dampening of electrical oscillations on iron wires, by John Trowbridge. The experiments lead to the conclusions that (1) The magnetic permeability of iron wires exercises an important influence upon the decay of electrical oscillations of high frequency. This influence is so great that the oscillations may be reduced to a half-oscillation on a circuit of suitable self-induction and capacity for producing them. (2) It is probable that the time of oscillation on iron wires may be changed. Only a half-oscillation has been obtained on iron wires, so this law cannot be stated definitely. (3) Currents of high frequency, such as are produced in Leyden jar discharges, therefore magnetize the iron.—Genesis of iron ores by isomorphous and pseudomorphous replacement of limestone, &c., by James P. Kimball. The author adduces a considerable amount of evidence showing that such products of epigenesis as siderite and ferro-calcite are, as a rule, products of direct pseudomorphous replacement of isomorphous calcic carbonate, like limestone, calcite, calc-sinter, calcareous sediments, &c. And the general proposition is therefore advanced that deposits of concentrated iron ores occur far more extensively as pseudomorphous replacements than is usually supposed.—On the constitution of certain micas, vermiculites, and chlorites, by F. W. Clarke and E. A Schneider. Chemical analyses of several specimens are given.—A further note on the age of the Orange Sands, by R. D. Salisbury. Some new facts are stated in support of the view that the Orange Sand series of sands and

© 1891 Nature Publishing Group